

skull of a Sumatran two-horned Rhinoceros, in the Museum of the College of Surgeons (No. 816), the circumference of that part of the surface of the skull which supported the posterior horn, and which includes precisely the same part of the os frontis, presents the same character, the surface being broken by numerous vascular impressions. On the supposition that this character of the supra-orbital arch in the Toxodon might indicate the superincumbency of a bony case, I examined the skulls of two Armadillos, *Dasypus Peba* and *Das. 6-cinctus*, and found that in the *Dasypus 6-cinctus*, the supra-orbital ridges, which are slightly elevated, to support the cephalic plate, presented, in a minor degree, a corresponding rugosity. May we venture then to conjecture that the Toxodon was defended by an ossified integument like the Armadillo, or that it was armed with an epidermic production, analogous to the horn of the Rhinoceros; or had the rugous surface in question as little relation with the parts that covered it as the sculptured surface of the malar bones in the Cavy?

After forming the rugged and prominent supra-orbital processes already described, the frontal bone continues to send backwards a slightly elevated ridge or *crista*, circumscribing the origin of the temporal muscles, but the extent of this ridge, and the disposition of the inter-orbital portion of the frontal bones cannot be determined in the present mutilated specimen. The fractures it has sustained are not, however, wholly unattended with advantage; they expose the structure of the diploë, which from its coarseness of texture and thickness, resembles that of the Cetaceous crania; and what is of still more importance, they also demonstrate the existence and form of the frontal sinuses.

The cavity of the nose is extensive, and the remains of the ossa spongiosa superiora testify that the Toxodon enjoyed the sense of smell to a degree equal at least to that of the Hippopotamus.

The *sphenoid bone* resembles that of the Hippopotamus, but it contributes a larger share to the formation of the internal pterygoid processes (*p*, Pl. II.); these are of a simple form, and more developed than in the Hippopotamus; they project outwards to a greater extent, and terminate in a point. The sphenoid also sends off a short and thick pointed process from the posterior part of the base of the internal pterygoid processes. The ala of the sphenoid does not rise so far into the orbit, nor does it articulate with the parietal bone, as in the *Hippopotamus*; but in this part of its structure, is the same as in the Rhinoceros. The sphenopalatine foramen is relatively larger than in the above-named Pachyderms, and is bounded above by the descending orbital plate of the frontal bone.

The palatal processes of the *palatine* bones terminate anteriorly between the last molars, and extend backwards for some distance beyond the alveolar processes, increasing the extent of the bony roof of the mouth posteriorly: this is a structure in which the Toxodon deviates both from the Rodents, and Pachyderms,

and resembles the Armadillos among the Edentata; excepting that the post-dental part of the bony palate in the Toxodon is suddenly contracted in breadth. The palato-maxillary suture is in the form of a chevron, with the angle directed forwards, as in the Hippopotamus and Cavy, but truncated.

The *superior maxillary* bones (*r*, Pl. II.) are united posteriorly to the malar, as above described: they ascend and join the frontal and nasal bones: their outer surface is almost vertical, smooth, and slightly undulating; perforated at its posterior part by the ant-orbital foramen, and joined anteriorly to the intermaxillaries by a suture running in the sigmoid direction (as shewn in Pl. II.) from the middle of the nasal cavity, to within four inches of the anterior boundary of the upper jaw. We have, in the position and extent of this suture, and the absence of tusks and their large prominent sockets, a most important difference between the Toxodon and Hippopotamus. The chief peculiarity in the maxillary bones, obtains in the arched form of the alveolar processes, corresponding to the shape and position of the grinders above described, and which are peculiar among known mammalia to the present genus. The palatal surface of the maxillary bones is obliquely perforated by two large foramina, from which two deep longitudinal grooves extend forwards, and are gradually lost; we find the posterior palatine foramina represented by similar grooves and foramina in the Cavy.

The *intermaxillary* bones (*d*, Pls. II. and III.), though large, are relatively of less extent than in the Rodents generally. The nasal processes do not reach the frontal bone, but are limited to the anterior half of the nasal boundary; approaching in this respect to the Herbivorous Cetacea. In the outward expansion of their anterior extremities, the intermaxillaries resemble those of the Hippopotamus, in which, however, this character is more strongly marked. The intermaxillaries in the Hippopotamus are also much less firmly united to the maxillary bones than in the Toxodon, and are consequently commonly lost in the fossil crania. On the palatal surface of the intermaxillary bones there are two grooves which diverge forwards from the line of the suture; and anteriorly to these grooves there are the two large anterior palatine foramina. The maxillo-intermaxillary sutures on the palate converge as they extend backwards to a point; there appears to have been a fissure left between this suture and the mesial suture of the intermaxillaries; in which structure the Toxodon resembles the Hippopotamus.

After summing up the different affinities, or indications of affinity, which are deducible from the cranium of this most curious and interesting fossil mammal, we are led to the conclusion, assuming it to have had extremities cased in hoofs, that it is referrible to the Order Pachydermata. But the structure, form, and kind of teeth in the upper jaw, prove, indisputably, that the gigantic Toxodon was intimately related to the Rodent Order. From the characters of this order, as afforded by the existing species, the Toxodon, however, differs in the relative